DOCUMENT RESUME

ED 295 633 IR 013 343

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TITLE Instructional Development and Teacher Education: A Naturalistic Study.
PUB DATE Jan 88
NOTE 22p.; In: Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (New Orleans, LA, January 14-19, 1988). For the complete proceedings, see IR 013 331.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis; Higher Education; *Instructional Design; *Instructional Development; *Methods Teachers; Naturalistic Observation; *Systems Approach; *Teacher Attitudes; Teacher Education; *Teacher Educators

ABSTRACT

This naturalistic study of teacher educators explored the differences between the attitudes of methods teachers and instructional development (ID) teachers toward ID and teacher education. Three faculty members were interviewed in depth, and brief questionnaires were sent to seven faculty members in each of the two fields; responses were received from three methods teachers and four ID teachers. Finally, two faculty members were presented with the conclusions of the study for critique. Analyses of the data on faculty views of ID indicate that: (1) there is considerable diversity of opinion about the value of systematically developed instruction among teacher educators; (2) the teacher educators and ID faculty who participated in this study were aware that there exists, within their own field, a variety of views about the virtues of systematically designed instruction, but were not aware of the variety of views on this same topic within the other field; and (3) some fundamental questions about the abilities of teacher education students and teachers in general seem to be at the root of the differences in belief about the place of systematically designed instruction. Both of the faculty members who critiqued the findings, and whose views about the place of technology in education were very different, characterized the existing situation in the schools as negative and the opposite of what they were proposing. Data from the interviews and questionnaires are appended. (3 references) (EW)

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Instructional Development and Teacher Education: A Naturalistic Study

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Instructional Development and Teacher Education

Several years ago, in an article in ECTJ, Sharon Shrock (1985) described her research on teacher attitudes towards instructional development. Shrock explained that ignorance of such attitudes is one reason that "in spite of our conviction that our technology could dramatically improve learning, most elementary, secondary, and college instruction proceeds today as it always has" (p. 16). Shrock went on to call for further research on teacher attitudes towards instructional development.

Recently, undergraduate education, including undergraduate teacher education, has been a primary target for reformers. This movement to reform undergraduate teacher education is likely to involve instructional development faculty working in university settings. Without an understanding of teacher educator's perceptions about instructional development, the efforts of instructional developers are as likely to create ill-will as improved teacher education programs.

In this study faculty beliefs about instructional development and teacher education were investigated. Nine faculty members participated in this study, all of whom teach in the school of education of a large state university. These respondents included five undergraduate methods teachers and four instructional development teachers. This semester-long study was emergent in design and was conducted primarily through interviews.

Methodology

The methodology of naturalistic inquiry was used in this study (Lincoln and Guba, 1985). In her own naturalistic study of faculty perceptions of ID, Shrock (1985) listed the following features of a naturalistic methodology: "The collecting of data occurs in real world settings in the relative absence of a priori assumptions. Data collection and analysis proceed simultaneously with additional data sources pursued on the basis of preliminary results" (p.18).

As with most naturalistic studies, the design of this inquiry emerged as it proceeded. Emergent design follows from the naturalistic assumption that individuals construct their own realities and an inquirer is unlikely to know enough about the constructed realities of others to be able to design a study a priori. The inquirers task is to make sense of multiple realities. The unstructured naturalistic methodology provides the inquirer the opportunity to explore diverse and complex realities without the limitations of a predetermined research design.

The conclusions of this study are traceable back to the data

sources from which they were drawn. Some of this data is included as Appendices A, B and C. The data in the appendices provides to the reader with the opportunity to critically consider the methodology and conclusions of this study.

Naturalistic inquiry, like experimental research, is considered to be disciplined inquiry. The means used to provide rigor in naturalistic inquiry are, however, quite different than the means used in experimental research. In naturalistic inquiry rigor is supplied through such means as prolonged engagement in the study, verifying interview notes with respondents, keeping a methodological journal, and leaving an audit trail which allows the conclusions of the study to be traced back to their sources in the data. In this study interview notes were given to respondents for correction and verification, a journal was kept of my thoughts on the study, and the conclusions are traceable to the notes and documents collected during this study (these data sources have been organized and bound into a booklet which is approximately 200 pages long).

Description of the Study

In this section I present a description of the major events of this study. Exerpts from some of the documents discussed in this section can be found in the appendices.

The Initial Question

This inquiry began with my interest in finding out whether the principles of instructional development are being taught to teacher education students. In my original research proposal I explained my purpose in these words: "Training in instructional design, custom fitted to the needs of future teachers, would bypass the political resistance of older teachers and administrators. The next generation of teachers could bring more effective education through the front doors of the elementary and secondary schools. But how much instruction in the basic principles of instructional development are teachers-in-training receiving?"

Very early in the study the emphasis shifted from this original question to the problem of understanding the differences between the ways methods teachers and instructional development teachers think about teacher education. The primary reason for this shift was my discovery that the methods teachers I was interviewing appeared to think much more like instructional developers than I had previously imagined.

In-Depth Interviews with Two Methods Teachers

Data collecting began with two sets of interviews: three

interviews with a science methods teacher and the three interviews with a math methods teacher. These respondents were chosen because of my interest in science and math education and because I was acquainted with these particular individuals. In introducing this study to these respondents I explained that my purpose was to find out what they thought was important in teacher education. (Exerpts from the notes of one initial interview are included in Appendix A.)

In the first of the three interviews I was interested in letting each respondent tell me, in an unstructured way, what he thought was important in teacher education, with particular emphasis on what was taught in his own methods course. Following these initial interviews I prepared summaries of what was said. In the remaining interviews (two with each respondent) I asked the respondents to elaborate, verify, and rank these important items. (One set of final rankings is given in Appendix A.)

As this phase of the study progressed I found that both methods teachers believed that systematically designed instruction is important, far more so than I had expected. Planning with objectives, formative evaluation, and the use of well-designed instructional materials were all ideas that were central in their courses. Learning to use technological devices to facilitate instruction, especially learning to use the computer, was also consistently mentioned as important.

I found the views of teacher educators on technology and systematically designed instruction to be curiously similiar to the views held by some instructional developers. I realized that my choice of respondents and the questions I had asked may have contributed to this finding. The next phase of the study was designed to further explore the differences in views between teacher educators and instructional designers.

Questionnaires Sent to Faculty Members

In the second phase of this study I sent questionnaires to seven methods teachers and seven instructional development teachers. In this brief questionnaire I asked faculty members two questions: what they thought teacher education students should learn about using technology in education and why they held the belief they did.

I received replies from three methods teachers and from four instructional development teachers. These written replies are provided in Appendix B.

Upon analyzing the data from these questionnaires I found that the variety of answers among groups was nearly as varied as the answers within groups. For example, in both groups there were members who defined technology as a process and other members who

defined technology as a product. In both groups were members who were very positive about the processes of instructional technology and members who saw limitations to an education which is overly reliant on physical technologies. One methods teacher wrote that he could easily see the computer taking over the information providing role of the teacher while one instructional development teacher wrote that teaching is child-centered and not technology-centered. Based on my limited sample, it appeared that methods teachers were very positive about the role of technolgical devices (especially the computer) as a means to present and manage instruction; perhaps more so than instructional development teachers.

At the conclusion of this second phase I had three tentative conclusions, all of which suprised me: a) that methods teachers promote instructional development processes in their courses; that methods teachers promote the use of technological devices among their students; and that methods teachers are not adverse to the idea that some of the roles of the teacher could be taken over by electronic delivery systems.

I felt the need to share these tentative conclusions with faculty who were likely to dispute them. Accordingly, I arranged to individually interview a methods teacher (refered to in the appendices as Dr. E) who was known for his humanistic approach to teacher education, and an instructional development teacher (Dr. Z) known for his strong stance in favor of instructional technology in education.

Presenting the Findings for Critique

In the third and final phase of this study I presented these two respondents (Dr. E and Dr. Z) with my preliminary conclusions. (Exerpts from the interview summaries are given in Appendix C.)

Dr. E told me he was not suprised with any of my findings. He said that most teacher educators have a technocratic and utilitarian view of teaching that emphasizes techniques. Methods teachers are not themselves based in any intellectual tradition and do not attempt to make future teachers thoughtful about education. He said that he believes teachers are disenfranchised and deskilled as a consequence of not being allowed to develop their own instruction. Schools, with their increasing emphasis on pre-packaged instructional materials and testing, are aggrevating this problem.

Dr. Z had a very different view of my results. He believed that my conclusions were very much open to question. First, I could not be certain that methods teachers were really teaching instructional

development concepts. Their understanding and use of these concepts may be very different than what I, as an instructional developer, would expect. Secondly, I had posed my questions about technology at such a high level of abstraction that the answers given by methods teachers only appeared to be similiar to those given by instructional developers. The real truth, he said, is that teacher educators are teaching teachers to be educational craftspeople under the mistaken assumption that teachers can be creative. Dr. Z believes that mediated adaptive instruction can take over many of the functions of the teacher. Technology can make use of specialization in educational planning and thereby could provide a much richer classroom environment than that currently provided by most teachers according to Dr. Z.

Conclusions

Four conclusions were reached about faculty views of instructional development. These four conclusions are tentative and apply only to some of the respondents who took part in this study.

Conclusion #1: Diversity of Views about Instructional Development

There is considerable variation in opinion about the value of systematically developed instruction among teacher educators. My preconceptions, perhaps due to my immersion in the culture of instructional design, were that teacher educators would not encourage the use of instructional design processes or products. This preconception was true in some cases. My final teacher educator respondent told me that there were some (a minority) teacher educators who believed that systematically developed instruction is very shallow education. The process of instructional development, according to this view, limits education to what is mechanical.

There are teacher educators, however, with a very different view of systematically designed instruction. All but one of the teacher educators in this study were positive about the products and processes of educational technology.

Conclusion #2: Unawareness of Diverse Views about Technology

The teacher educators and instructional development faculty who participated in this study were aware that there exists, within their own fields, a variety of views about the virtues of systematically designed instruction. These respondents were not aware, however, of the variety of views on this same topic within the other field.

Both of my final respondents (Dr. E and Dr. Z) discussed the controversy in their own fields concerning the strengths and

weaknesses of systematically designed instruction. At the same time, they directly stated and implied (see Appendix C) that individuals in the other field were all of like mind.

My final instructional development respondent (Dr. Z) told me that his own views about technology in schools differ with the views Michael Streibel presented in a recent issue of ECTJ (1986). Streibel argues that systematically developed computer drill and practice, tutorials and simulations are harmful to learning. Dr. Z infered that teacher educators hold a similiar view (see Appendix C).

Yet this was not the only view about technology held by teacher educators. Most of the teacher educator respondents had a very pro-technology attitude towards instruction, even to the point of saying that the teacher may be replaced in part by the computer (see Appendix B).

Conclusion #3: Different Assumptions about Teacher Potential

At the root of the differences in belief about the place of systematically designed instruction are some fundamental questions about the abilities of teacher education students and teachers in general. My final instructional development respondent, Dr. Z, made it very clear that he thought teacher education students were of low quality and had little of the creativity that curriculum developers assume them to have. According to his position, this lack of ability and creativity is the primary reason that scientifically developed instructional materials are needed in the classroom. When I asked him if such materials would be necessary if teachers were able and creative he answered no.

My final teacher education respondent, Dr. E, had a different view of teacher potential. He felt that there were teachers with talent and that such talent needs to be used. In an article he showed me this respondent had written "While there are many teachers who want (and a few who need) to be told exactly how and want to teach, if thoughtful and creative teachers are not allowed to make meaningful instructional and curricular decisions then the result will almost certainly be a loss of pride in one's work" (reference not given to respect the respondent's anonymity).

These two respondents agree that not all teachers are capable of developing their own instruction. Dr. Z felt that the problem is acute enough to warrent restructuring education around materials produced by experts, giving the teacher a supporting role. Dr. E's view, however, was that teachers, given the right education, will be able to function effectively and autonomously in the classroom; autonomy being the foundation of quality teaching.

Conclusion #4: Placing the Blame for Educational Problems

I found it interesting that my final respondents, whose views about the place of technology in education were very different, both characterized the existing situation in the schools as negative and opposite to what they were proposing.

Dr. E, the methods teacher, characterized the current situation in the schools as disenfranchising and tightly controlled due to the mandated use of systematically developed materials. Dr. Z characterized teachers as poorly qualified but autonomous instructional decision makers.

Discussion

I believe that the conclusions of this study are related to some typical ways that individual human beings make sense out of their worlds. In this section I explain how the conclusions of this study can be understood in terms of some of the ways that misunderstandings and antagonisms arise as people interpret complex phenomena.

Awareness of Individual Viewpoints

First, individuals sometimes ignor the uniqueness of others, especially those who are perceived as belonging to an outside group. Based on the first two conclusions of this study, I would suggest that instructional developers are capable of forgetting that teacher educators, like all groups of people, are made up of individuals with diverse views on most issues. More communication with teacher educators would be my advice to instructional developers who wish to avoid the typical human tendency to develop inaccurate generalizations.

Awareness of Different Assumptions

A second tendency people have when making sense of their world is to forget that their assumptions may be different than those of others. At the root of the debate over the use of instructional development are differing assumptions about the match between teacher potential and the goals of education. One assumption that was identified in this study is that education is fundamentally an enterprise where information and skills are transmitted. Furthermore, teacher education students do not have the ability to serve as the central figures in such a process.

A contrasting assumption, also identified in this study, is that teacher education students do have the ability to serve as the central figures in any educational setting. According to this assumption, teachers must have a central role because education is essentially a human interaction.

Ignoring that others have different assumptions about the nature of education and the potential of teachers seems to have resulted in an antagonistic attitude among some instructional developers and some teacher educators. If instructional developers could step outside of their own assumptions about educational aims and teacher abilities they would be more likely to appreciate and assist those with other assumptions.

Placing the Blame

A third and final way people tend to make sense out of their world is to assume that if something is not working it must be someone else's fault. Some teacher educators partially blame the current education crisis on systematically designed instructional packages while some instructional development faculty blame the same crisis on teacher freedom to do whatever they want. A constructive response towards these contrasting beliefs might be for individuals to carefully consider what the other side has to say and be willing to incorporate them into their thinking

Some Final Thoughts

As with all naturalistic studies, the complexities and unique local features (as well as the assumptions of the research paradigm) make it impossible to generalize specific results, either to the faculty members in the school of education where this study took place or to any other faculty. However, the result that I hope this study will have is to provoke thought among those interested in working towards the building of better educational systems. With this in mind, I would like to share an insight I have gained from my participation in this study.

I can imagine that there are two opposing ways of thinking that influence the minds of both methods teachers and instructional developers: expansive thinking and disciplinary thinking. Expansive thinking is creative, unfocused, innovative, idealistic, irresponsible, and humanistic. Disciplinary thinking is systematic, dehumanizing, objectives-based, sterile, and utilitarian. Individual educators tend to be influenced more strongly by one or the other of these ways of thinking and tend to see less value in the ideas of those influenced by the opposing way of thinking. My hunch is that good instructional design and practice flourish when these two ways of thinking are fully appreciated and balanced.

Inquiry aimed at making sense of how individuals think about instructional design and education can play a significant part in communicating ideas between and among instruction developers and others in the educational community. Such inquiry, if done and received in a spirit of openness and fairness, could have widespread benefits.

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Appendix A: Selected Data from the First Stage of the Study

Interview With Dr. B.

I saw Dr. B. in the hall outside his office as I arrived for our first meeting. He offered me a cup of coffee, and got himself a cup. He told me that his wife would be bringing him his breakfast at about 8:20.

I explained the consent form to him and he signed it without question, then I briefly explained the research I was doing. I told him that I wanted to get some idea of what he thought teachers should be taught. He told me first that you can't teach teachers how to teach; in fact you can't teach anybody anything. A person has to learn how to teach (or do anything). He said that he provides tools with which to think about teaching. It is through thinking that teaching can improve. If teachers don't think, nothing will improve. He said that poor teaching is an easy job.

He teaches a five unit methods class including lecture, theory and laboratory. Students have different kinds of laboratory experience, they can hide behind the aparatus at first but increasingly move towards interactive teaching.

He is a cognitive science individual. It is most important to find out what students know and add to that. He interview students, talks to them, listens to them and then provides activities that will provide the next challenge. He added that he is not sure that this is successful.

Every year he changes the course. Trying to get at something he missed before. Now, in his later career, he finds most assignments are average to above average-they meet the needs of the students. Students need to feel that the course meets their needs, that it is worthwhile. They need enthusiasm.

He described some details about his course:

- Students identify a chapter and identify all concepts in a manner consistent with Gagne. They then make a chart showing how the chapter
treated the topic. Students make a network diagram in another assignment. Students also write performance objectives and intended learning outcomes.
- He is concerned that students find objectives for each category of outcome, not just the typical cognitive outcomes. He is concerned that objectives are mechanically correct and that the behavior is significant. Students can redo assignments if they are turned in on time and many do (the best teachers are often those who turned in
an assignment again for a point). The objective of the

course is to become a profesional not learn content: they need to get better.
People have to realize that they do not need to do it right the first time.
• Lesson plans should have 'mind captures', and deal with the past(what students already know), present(what is important) and future.
• He believes in formative testing: test early and often (he compared this to Mayor Daley's quote: vote early and often). He believes that students must create a resource list. Look for the full variety of resources. Variety is a powerful variable in learning. It takes 5 years to become a good teacher perhaps because it takes 5 years to locate all the materials.
• Communication is the most important process skill.
Science begins and ends with a hypothesis (not observation).
• His students are encouraged to implement with existing materials, not reinvent the wheel, which is what most beginning teachers tend to do. To do a good job you have to be a good thief.

2. Summary of Dr. B's Views on What is Important

Introduction: The following information is derived from a series of three interviews. The first was open ended and resulted in a list of items that are important in the teaching of a secondary science methods course. The second and third interviews were used to clarify, confirm and extend this list of items.

The focal question of this study became : 'What is important in teaching a secondary science methods course?' The list of important items is given below. These items are organized into categories and subcategories to assist the reader.

ITEMS ARE LISTED BELOW ALONG WITH A REASON [IN BRACKETS] THAT EACH ITEM IS IMPORTANT. Following most of the items is a number (1,2 or 3) which indicates the relative importance of that item and a letter (A, B or C) which indicates the relative success the course has at achieving that item. (The respondent noted that the relative success of an item is related to when the item is presented during the semester: those items presented later tend to be more successful because more prerequisite learning has gone on.)

Category 1: IT IS IMPORTANT THAT THE METHODS TEACHERS REMEMBER THESE IDEAS

1. Provide tools with which to think about teaching[you cannot teach anyone anything, they have to do the learning themselves] {3/B}
2. Frequent evaluation[provides the optimal amount of uncertainty: positive tension] {2/A}
3. Students should realize it is possible for everyone to get full credit for an assignment[so they can pass this attitude to their own students] {2/B or C}
4. The role of the critic teacher is important [this teacher has a lot of credibility] {2}
5. Schools need to reform [teachers need more authority and responsibility] {3/B}
6. Model appropriate teaching behavior[there is no credibility in the attitude: Don't do as I do, do as I say] {2/B}
7. Students should be taught that which they perceive will be useful [for teacher credibility] {1/B}

Category 2: IMPORTANT GUIDING PRINCIPLES FOR TEACHERS

Subcategory 2.1 GENERAL PRINCIPLES
8. Find out what students already know and build on that[cognitive science has pointed this out as an effective strategy] {3/B+}
9. Project the message that students can and will learn[this is a self-fullfilling prophesy] {3/A-}
10. Know the characteristics of future pupils [think of them as being not future science teachers but in the great variety of roles they will play] {3/B}
11. Maximize student-student, student-teacher interaction[learning is an active process] {3/B-}
12. Realize that students do not have to do things right the first time [we need to practice] {3/B}
13. Find relations between concepts(networking)[relationships are the glue that hold ideas together] {3/A-}

Subcategory 2.2 SCIENCE PRINCIPLES (THESE SHOULD BE THE RESPONSIBILITY OF ARTS ANDSCIENCE, NOT TEACHER EDUCATION)
14. Realize science is not what is in a science textbook, that science has wrong paths, frustrating moments ... it is not all neat and clean [they have often missed this despite being science majors] {3/B}
15. Do scientific thinking, which is making hypotheses based on information {3/B}

16. Teach the understanding of relationships[it important to know how and why you know things] {2/B}

Category 3: PREPARING TEACHERS FOR THE CLASSROOM IS IMPORTANT

Subcategory 3.1: GENERAL PREPARTION
17. Identify resources[variety is a powerful variable in learning] {3/B}
18. Be aware of science education issues[for job interviews, communication with colleagues] 2/B}
19. Learn to use the material in the AV learning laboratory[teacing aids can be a great help in saving time and allowing more teacher contact with the class; technologies need to be used properly] {3/B}
20. Teach using the strategy of 'hands on, minds on'[learning is an active process] {2/B+}
21. Understand different categories of intended learning outcomes[to avoid a myopic view of learning] {2/B}
22. Identify concepts[concepts are good handles, they are more generalizable than facts] {2/A-}
23. Ask productive questions(those which students can answer)[because bad questions are common and serve no purpose] {3/B+}

Subcategory 3.2: LESSON PLANS
24. Prepare lesson plans[otherwise variety is not possible] {2/A-}
25. Find objectives for many different cognitive outcomes[otherwise only one type tends to be taught: knowing facts {2/A-}
26. Prepare a case history lesson plan(dry lab)[variety] {2/A-}
27. Prepare a laboratory lesson plan[this is difficult to implement properly] {2/A-}
28. Write performance objectives or a table of specifications with significant behaviors[so the objectives are not formal but useful] {2/A}
29. Design mind captures for lessons[to get the students attention] {2/B}
30. Put question sequences in lesson plans[this defines the path of the lesson, it is the operational definition of the objectives. {1/A-}
31. Classify questions according to the type of outcome[to insure a variety of question types] {2/A}

Subcategory 3.3: PRESENTATION
32. Be able to communicate[writing and talking prove that you know something and give you practice thinking] {3/B+}
33. Get students to pose questions at the right time, not before the interest is there[otherwise learning is highly perishable] {3/B}
34. Receive feedback on presentations[so they can work on weaknesses] {3/B}
35. Making oral presentations[for practice]{2}
36. Videotaping oral presentations[for feedback] {2/B+}
Subcategory 3.4: EVALUATION
37. Know how to do formative evaluation[provides corrective feedback] {3/A}
38. Know how to write a formative test[the philosophy implicit in formative testing is important: what is it that students still need to learn? vs. what do students not know?] {3/B}
39. Evaluate software[so they know what is valuable] {2/A-}
40. Evaluate textbooks[so they know what to expect from a textbook] {2/B}

Appendix B: Selected Data from the Second Stage of the Study

1. Responses of Instructional Development Teachers

Question 1: What are the most important things teacher education students should learn about using technology in education?
Question 2: Why do you believe this?

Dr. Z
1. Learn to retain(and make the best use of)the integrity of technologically-based instruction instead of second-guessing decisions that have already been used. Don't cannibalize instructional packages.
2. The vast majority of teachers have a king-of-the-hill attitude when most of them haven't risen above the peasant level. They need to accept technologically-based instruction on at least an equal footing with their own.

Dr. Y
1. a) They should understand technology as a process i.e. ASSURE model. b)They should know the characteristics of various media and how they fit into the process.
2. Using a procedural model (such as ASSURE) can increase the effectiveness or th eteaching learning process and that is an important objective of education.

Dr. X
1. When the findings and principles of the behavioral sciences (psychology, anthropology, linguistics, artificial intelligence, etc.) are applied to the analysis and solution of the problems of instruction, resulting in ever more effective teaching, we have instructional technology. Teachers need to know how to design, develop, deliver, and evaluate instruction. But no one person can do all this. We will have to specialize.
2. A purely intellectual exercise growing out of the definition of technology (and instruction) combined with what little I know about the sciences that could lead to an applied educational art: instructional technology.

Dr. W
1. a. Soft technology: The concepts of instructional design in general. The process of instructional development at the classroom level.
b. Hard Technology: Use of chalkboard, bulletin board, overhead, film projector, VCR, using computers

2. My position clearly is that teaching be objectives-centered/child-centered and not technology-centered. In technology use I like teachers to learn to use the chalkboard as well as the computer.

2. Responses of Teacher Educators

Question 1: What are the most important things teacher education students should learn about using technology in education?
Question 2: Why do you believe this?

Dr. B. (a science methods teacher)
1. Students should learn that technology can often deliver and collect information faster and more efficiently than can humans.
2. Whenever the computer is faster and more efficient it should be used to assist in instruction. I do not see computers replacing teachers in my lifetime, however they could replace the information providing role of teachers very easily.

Dr. C (an art methods teacher)
1. a. Be prepared to build instructional data bases(usually verbal)-get ready for when they become available from some centralized source.
b. Word processing/E-mail/spreadsheet tools are essential
c. Some preliminary programming-to understand the process of machine operation first hand (graphics are very good for this)
d. Experience with various interactive devices/programs: educational applications must feature interactivity and individualization
2a. Involvement with a course on computers for teachers since its inception
b. Involvement with simulated databases for 16 years and retrieval for educational applications
c. Reading literature of computer based education
d. Teaching computer graphics to teachers
e. Continuous use of my own computer

Dr. D (a reading methods teacher)
1 a. What areas technology may be useful. i.e. management, instruction, etc.
b. How technology may enhance learning for students.

2. In order to make the most use of technology it is important to know the specific areas where it (technology) has the greatest potential. Secondly, we should base all our technology in terms of how it will improve or enhance student learning. We need to keep focused on what its use does and not on what it looks like.

Appendix C: Selected Data From the Third Stage of the Study

Interview With Dr. E , His Office, 9:30 - 10:30

I started by telling Dr. E about my research: characterizing it as a study of how methods teachers and ID teachers view teacher education. I then gave Dr. E my three tentative conclusions and asked him to comment on them.

Conclusion 1: There is little difference between how each group promotes instructional design tools like objectives and evaluation.

Dr. E said that did not suprise him: that methods teachers have had and do have a technocratic view of teacing. They are utilitarian and emphasize techniques.
He does not hold this view. He believes that the goal of . teacher education should be to make teachers more reflective about the teaching process.(see Dewey on the Relation of Theory to Practice, circa 1904) Knowledge should be presented as problematic, not absolute. This is not to say that objectives should not be taught: but they should be explored, discovering the trade-offs. It is important to deal with issues such as social injustices. A safe environment must be provided for teachers.

Conclusion 2: Methods teachers are, if anything, more positive about the role of physical technologies, such as the computer, improving the status of education.

Dr. E said that this was not suprising because methods teachers have little historical perspective. As Dewey said, they are suseptible to fads because they do not see themselves as a body of intellectuals. They believe that technologies would do more of what we do now only better. In essence computers are being put to limited use: mainly to do workbook type things. Teachers are being treated as mindless individuals. In some upper class schools there may be an attempt to see technology used creatively. In other schools we will see only glorified workbooks.

Conclusion 3: Teacher educators are willing to consider the notion that the information presenting role of the teacher can be taken over by mediated instruction.

Dr. E said that teachers are seen primarily as managers who are not supposed to be thoughtful. The conception of learning varies. Some believe that children bring something to the learning situation.

The perspective of the society is restricted as are the

views of most teacher educators. Dr. E believes that teachers are being disenfranchised and deskilled by not being allowed develop their own instruction.. Now, teaching function is largely managerial and is being moved more that way. The programs being developed are often based on narrow methods, and assume that there is someone who can do it better. In this view it is asumed that we need to be more specialized and that kids are similiar to each other. This is elitist and belies common sense. It makes people who design programs feel good about themselves. But they see education as if it were like putting lots of bumper stickers on a car.

December 18 Interview With Dr. Z, His Office 10:30-11:15

I introduced my study and then asked Dr. Z to comment on the three conclusions I had reached.

1. Both teacher educators and IST professors promote instructional development tools such as objectives and formative evaluation.

Dr. Z made the point that the tools such as evaluation and objectives can mean very different things to different groups. Evaluation is usually not used as a way of improving products by teachers, although the best of them will use it as a means of improving their own performance.

Objectives too can mean diferent things. Is the final exam based on the objectives? In short, we must always be skeptical of postures.

Conclusion 2: Teacher educators are positive about using physical technologies, in fact, perhaps more positive than ID professors.

One way that an undergraduate media course was eliminated was by having this incorported into methods courses. This would tend to make media teaching more ancillary. Teacher educators are in the business of teaching teachers to be king of the hill and we are part of the hill. You also have to be careful about what people say; if you ask people in media centers if they use instructiona development they will say yes.

Dr. Z said that if questions are posed at a sufficiently high level of abstraction you can get agreement.

Conclusion 3: Teacher educators are willing to consider the notion that the information presenting role of the teacher can be taken over by mediated instruction.

Teachers educators kid themselves about the value of the products they turn out. They are scraping the bottom of the barrel. There are indications that teachers like good materials that have been prepared for themselves but that curriculum developers keep pushing the notion that teachers need to be creative. They keep spinning out the notion that teachers have expertise and provide them with more strategies than they could ever use. Teachers are really looking for all the help they can get. The real reason for teacher burnout is the strain and stress caused by having to do so much.

It is so difficult to make use of what we are learning about designing materials: Gagne's and Merrill's ideas are not applicable by teachers who do not have the time or ability to learn them.

It is possible to teach problem solving and other kinds of thinking using mediated instruction in the form of adaptive instruction. Jerome Bruner said that when he wrote his book that he wanted to provide material that teachers were not up on and to model the discovery and problem solving type learning that teachers were not using.

Dr. Z said that he could not imagine a more stimulus poor environment than being in a classroom with a single, poor teacher. Technology can make use of specialization of knowledge, is more reliable, can spread the expertise of the few expert teachers that we have.